

Pending Claims

1. A method for determining the activity range of a test compound, which modulates the uptake of serotonin by a serotonin reuptake transporter (SERT), against a secondary target, said method comprising the steps of:

(a) contacting a first nematode expressing a mutated *Caenorhabditis elegans* SERT (CeSERT) polypeptide, wherein said mutated CeSERT polypeptide has a reduced capacity to take up serotonin relative to wild-type, with said compound;

(b) assaying a defined behavior of said first nematode; and

(c) comparing said defined behavior of said first nematode to the defined behavior of a second nematode not contacted with said compound, wherein a difference in said defined behavior between said first and second nematode indicates that said compound has a secondary target.

2. The method of either claim 1 or 12, wherein steps (a) to (c) are repeated using first and second nematodes selected from a panel of nematodes expressing mutant CeSERT polypeptides, wherein said mutant CeSERT polypeptides differ from said mutated CeSERT polypeptide of step (a).

3. The method of either claim 1 or 12, wherein said mutated CeSERT polypeptide is a complete loss-of-function.

4. The method of either claim 1 or 12, wherein said method comprises a liquid locomotion assay.

5. The method of either claim 1 or 12, wherein said defined behavior is movement, pharyngeal pumping, egg-laying, nose contraction, or defecation.

6. The method of either claim 1 or 12, wherein said mutated CeSERT polypeptide is selected from the group consisting of a CeSERT(*n822*) polypeptide, a CeSERT(*n823*) polypeptide, and a CeSERT(*n3314*) polypeptide.

7. The method of either claim 1 or 12, wherein said compound is from a class of compounds selected from a group consisting of antidepressants, migraine medications, and anti-emetics.

8. The method of claim 7, wherein said antidepressant is a selective serotonin reuptake inhibitor.

9. The method of claim 7, wherein said antidepressant is a tricyclic antidepressant.

10. The method of claim 7, wherein said antidepressant is a monoamine oxidase inhibitor.

11. The method of either claim 1 or 12, wherein said test compound is administered at more than one concentration.

12. A method for identifying a test compound capable of modulating the uptake of serotonin by a serotonin reuptake transporter (SERT), wherein said test compound modulates the activity of a secondary target that is not a SERT, said method comprising the steps of:

- (a) contacting a first nematode expressing a mutated *Caenorhabditis elegans* SERT (CeSERT) polypeptide, wherein said mutated CeSERT has a reduced capacity to take up serotonin relative to wild-type, with said compound;
- (b) assaying a defined behavior of said first nematode; and
- (c) comparing said defined behavior of said first nematode to the defined behavior of a second nematode expressing said mutated CeSERT polypeptide but not contacted with said compound, wherein a difference in said defined behavior between said first and second nematode indicates said compound is capable of modulating the uptake of serotonin by a serotonin reuptake transporter (SERT) by modulating the activity of a secondary target.